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CLAIMS

[Utility model registration claim]

[Claim 1] In the piping joint connected to piping for which the circular sulcus was formed in the periphery section of an edge The body cylinder by which the communication trunk was connected to the end face while both ends were opened wide and the tip was open for free passage with said piping, and the rotation lock object receptacle section was formed in the periphery section while the valve seat was prepared in the internal hole, While being arranged possible [axial directional movement] at the internal hole of this body cylinder, making it said valve seat at taking a seat and closing the internal hole of said body cylinder The valve element from which the migration turned at the tip of said body cylinder by said piping is prevented when said body cylinder and said piping are open for free passage, the valve element energization object which applies the force towards said valve seat to this valve element, and both ends open wide -- having -- the periphery at the tip of said body cylinder -- shaft orientations -- movable -- and liquid -- with the 1st connection cylinder by which fitting of the tip was carried out to the periphery section at the tip of said piping, and the annular circular sulcus was formed in the periphery section, while fitting is carried out densely The 1st connection cylinder energization object which applies the force to said body cylinder towards that end face while applying the force to this 1st connection cylinder towards the tip of said body cylinder, Both ends are opened wide, it is prepared in the periphery of said 1st connection cylinder possible [axial directional movement], and fitting of a tip and the end face is carried out to the periphery section of a part in which the circular sulcus of said piping was formed for the projection tip from said the 1st tip and end face of a connection cylinder, and said 1st connection cylinder contacts an internal hole. When fitting of the tip is further carried out to said piping, while it has the connection cylinder halt section which prevents the migration which goes at the tip of said the body cylinder, and having the 1st engagement hole which penetrates between an internal hole and the periphery sections in the circular sulcus of said piping, and the location which counters The 2nd connection cylinder which has the 2nd engagement hole in the circular sulcus of said 1st connection cylinder, and the location which counters when it moves towards the end face of said body cylinder, The 2nd engagement object with which radial migration of said 2nd connection cylinder was held possible at the 1st engagement object with which migration 2nd connection cylinder radial [said] was held possible at said 1st engagement hole of this 2nd connection cylinder, and said 2nd engagement hole, When the range which can cover said 1st engagement hole and said 2nd engagement hole in coincidence can be established in the periphery section of said 2nd connection cylinder possible [axial directional movement] and it moves to the inner circumference section towards the tip of said body cylinder, said 1st engagement object and said 2nd engagement object are pushed, respectively. While having the engagement object presser-foot section made to project to the inner circumference side of said 2nd connection cylinder The actuation sleeve which has charge coalesce ***** which permits the protrusion to the periphery section of said 2nd connection cylinder of said 1st engagement object and said 2nd engagement object when it moves towards the end face of said body cylinder, The actuation sleeve energization object which applies the force to this actuation sleeve towards the tip of said body cylinder, While it is screwed in the end face of the internal hole of said 2nd connection cylinder and a tip contacts the body cylinder end face side face of the rotation lock object receptacle section of the periphery section of said body cylinder, a end face projects outside from the end face of said 2nd connection cylinder, and a rotation control unit is formed there. The piping joint characterized by providing the rotation lock object which you push [object] said body cylinder, makes it move in the same direction, and makes said valve seat estrange from said valve element when moving to the shaft orientations of said body cylinder by rotation actuation of this rotation control unit and moving towards the tip of said body cylinder.

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DETAILED DESCRIPTION

[Detailed explanation of a design]

[0001]

[Industrial Application]

This design is related with a piping joint.

[0002]

[Description of the Prior Art]

For example, when connecting piping of the refrigeration system for automobiles, and piping of refrigerant restoration equipment, piping for which the annular circular sulcus was formed in the periphery section of an edge as piping of a refrigeration system is used.

[0003]

Thus, there is a thing of a configuration of stating below as a piping joint connected to piping for which the annular circular sulcus was formed in the periphery section of an edge.

Namely, the body cylinder by which the communication trunk was connected to end face opening, and the valve seat was formed in the internal hole while both ends were opened wide and tip opening was open for free passage with said piping. The valve element which is arranged possible [axial directional movement] at the internal hole of this body cylinder, sits down to said valve seat, and closes the internal hole of said body cylinder. The valve element energization object which applies the force towards said valve seat to this valve element, and the connection cylinder by which fitting of the tip was carried out to the periphery section at the tip of said piping, and the annular circular sulcus was formed in the periphery section while fitting of the axial directional movement was made possible to the periphery at the tip of said body cylinder. The connection cylinder which has the engagement hole which penetrates between an internal hole and the periphery sections in the circular sulcus of said piping, and the location which counters when said connection cylinder has the connection cylinder halt section which prevents the migration turned at the tip of said the body cylinder in contact with the internal hole and fitting is carried out to piping. Radial migration of said connection cylinder is held possible at the engagement hole of this connection cylinder. An engagement object. The connection cylinder energization object which applies the force turned to said body cylinder at the end face while applying the force towards at the tip of said body cylinder to said connection cylinder. When it is prepared in the periphery section of said connection cylinder possible [axial directional movement] and moves towards the tip of said body cylinder, while making said engagement object project to the inner circumference side of said connection cylinder. The actuation sleeve which permits that said engagement object projects to the inner circumference side of said connection cylinder when it moves towards the end face of said body cylinder, and the actuation sleeve energization object which applies the force towards at the tip of said body cylinder to this actuation sleeve are provided.

[0004]

In this piping joint, the variation rate of the connection cylinder is always carried out towards the end face of a body cylinder with a connection cylinder energization object, the engagement object prepared in the engagement hole formed in the connection cylinder is pushed on a body cylinder, and the variation rate is carried out to the periphery section of a connection cylinder. Moreover, although the variation rate of the actuation sleeve is carried out to a body cylinder tip side with an actuation sleeve energization object, a variation rate is prevented with an engagement object.

[0005]

And in connecting this piping joint to piping, piping is inserted at the tip of a body cylinder from the tip of a connection cylinder, and the engagement object prepared in the engagement hole is pushed on a connection cylinder, and engages with the circular sulcus of piping. Piping pushes the valve element of a body cylinder and opens a path. Since the variation rate of the actuation sleeve is carried out to the tip side of a body cylinder with the energization object, the condition that the engagement object is engaging with the circular sulcus of piping is held. Thereby, the connection condition of piping and a joint can be locked.

[0006]

[Problem(s) to be Solved by the Device]

However, also in the aforementioned piping joint, when a connection cylinder is accidentally turned and moved to the end face of a body cylinder, it may be said that the condition that the engagement object is engaging with the circular sulcus of piping is canceled, an engagement object will become free and connection between piping and a joint will be canceled.

This design was made based on said situation, and aims at offering the piping joint which can certainly lock a junction condition with piping by easy actuation.

[0007]

[Means for Solving the Problem]

In order to attain said purpose the piping joint of this design In the piping joint connected to piping for which the circular sulcus was formed in the periphery section of an edge The body cylinder by which the communication trunk was connected to the end face while both ends were opened wide and the tip was open for free passage with said piping, and the rotation lock object receptacle section was formed in the periphery section while the valve seat was prepared in the internal hole, While being arranged possible [axial directional movement] at the internal hole of this body cylinder, making it said valve seat at taking a seat and closing the internal hole of said body cylinder The valve element from which the migration turned at the tip of said body cylinder by said piping is prevented when said body cylinder and said piping are open for free passage, - valve element energization object which applies the force towards said valve seat to this valve element both ends open wide -- having -- the periphery at the tip of said body cylinder -- shaft orientations -- movable -- and liquid -- with the 1st connection cylinder by which fitting of the tip was carried out to the periphery section at the tip of said piping, and the annular circular sulcus was formed in the periphery section, while fitting is carried out densely The 1st connection cylinder energization object which applies the force to said body cylinder towards that end face while applying the force to this 1st connection cylinder towards the tip of said body cylinder, both ends are opened wide, it is prepared in the periphery of said 1st connection cylinder possible [axial directional movement], and fitting of a tip and the end face is carried out to the periphery section of a part in which the circular sulcus of said piping was formed for the projection tip from said the 1st tip and end face of a connection cylinder, and said 1st connection cylinder contacts an internal hole. When fitting of the tip is further carried out to said piping, while it has the connection cylinder half section which prevents migration of the sense which approaches at the tip of said the body cylinder, and having the 1st engagement hole which penetrates between an internal hole and the periphery sections in the circular sulcus of said piping, and the location which counters The 2nd connection cylinder which has the 2nd engagement hole in the circular sulcus of said 1st connection cylinder, and the location which counters when it moves towards the end face of said body cylinder, The 2nd engagement object with which radial migration of said 2nd connection cylinder was held possible at the 1st engagement object with which migration 2nd connection cylinder radial [said] was held possible at said 1st engagement hole of this 2nd connection cylinder, and said 2nd engagement hole, When the range which can cover said 1st engagement hole and said 2nd engagement hole in coincidence can be established in the periphery section of said 2nd connection cylinder possible [axial directional movement] and it moves to the inner circumference section towards the tip of said body cylinder, said 1st engagement object and said 2nd engagement object are pushed, respectively. While having the engagement object presser-foot section made to project to the inner circumference side of said 2nd connection cylinder The actuation sleeve which has charge coalesce ***** which permits the protrusion to the periphery section of said 2nd connection cylinder of said 1st engagement object and said 2nd engagement object when it moves towards the end face of said body cylinder, The actuation sleeve energization object which applies the force to this actuation sleeve towards the tip of said body cylinder, While it is screwed in the end face of the internal hole of said 2nd connection cylinder and a tip contacts the body cylinder end face side face of the rotation lock object receptacle section of the periphery section of said body cylinder, a end face projects outside from the end face of said 2nd connection cylinder, and a rotation control unit is formed there. When moving to the shaft orientations of said body cylinder by rotation actuation of this rotation control unit and moving towards the tip of said body cylinder, it is characterized by providing the rotation lock object which you push [object] said body cylinder, makes it move in the same direction, and makes said valve seat estrange from said valve element.

[0008]

[Function]

Piping is inserted at the tip of a body cylinder through the 1st connection cylinder from the tip of the 2nd connection cylinder.

The 1st engagement object of the 1st engagement hole is pushed on an actuation sleeve, and engages with the circular sulcus of piping. The 2nd engagement object of the 2nd engagement hole is pushed on an actuation sleeve, and engages with the circular sulcus of the 1st connection cylinder. Piping pushes the valve

element of a body cylinder and opens a path. Since the variation rate of the actuation sleeve is carried out to the tip side of a body cylinder with the energization object, the condition that the engagement object is engaging with the circular sulcus of piping is held.

[0009]

And a rotation lock object is rotated, it moves to the tip side of a body cylinder, and the 2nd connection cylinder prevents the migration towards the tip of a body cylinder. Thereby, the connection condition of piping and a joint can certainly be locked.

[0010]

[Example]

One example of this design is explained with reference to drawing 1 and drawing 2. This example is aimed at the piping joint used when connecting piping of the refrigeration system for automobiles, and piping of refrigerant restoration equipment.

[0011]

As shown in drawing 1, 1 is piping of a refrigeration system, and as for this piping 1, the annular projected part 2 and the circular sulcus 3 are formed together with the periphery section of an edge from the tip side. The stopper 4 is formed in the interior of piping 1. Piping 1 is connected to the refrigeration system which is not illustrated.

[0012]

Next, the configuration of a piping joint is explained.

11 is a body cylinder. While both ends are opened wide and a tip opens this body cylinder 11 for free passage with piping 1, the communication trunk connected to the refrigerant restoration equipment which is not illustrated is connected to the end face. Moreover, while the valve seat 12 is formed in the internal hole, as for the body cylinder 11, the rotation lock object receptacle section 13 is formed in the periphery section.

[0013]

14 is a valve element. This valve element 14 consists of valve element section 14b formed in the end face of cylindrical section 14a and this cylindrical section 14a. And when it is arranged possible [axial directional movement] and cylindrical section 14a moves to the internal hole of the body cylinder 11 towards the tip of the body cylinder 11, cylindrical section 14a of a valve element 14 While valve element section 14b sits down to a valve seat 12 and closes the internal hole of the body cylinder 11, when the body cylinder 11 and piping 1 are open for free passage, the migration which cylindrical section 14a turned at the tip of the body cylinder 11 in contact with the stopper 4 of piping 1 is prevented.

[0014]

15 is the valve element energization spring which consists of a compression coil spring, and this spring 15 is applying the force towards a valve seat 12 to the valve element 14.

16 is the 1st connection cylinder. Both ends are opened wide and, as for this 1st connection cylinder 16, the circular sulcus 17 is formed in the periphery section, the periphery section at the tip of the body cylinder 11 -- shaft orientations -- it is movable and fitting is carried out -- both, O ring 19 is formed in an internal hole, and airtightness is given between the periphery sections of the body cylinder 11, and fitting of the tip of the 1st connection cylinder 16 is boiled and carried out to the periphery of piping 1, and O ring 18 is formed at the tip of an internal hole.

[0015]

20 is 1st connection cylinder energization spring which consists of a compression coil spring. This spring 20 is applying the force to the body cylinder 11 towards that end face while applying the force to the 1st connection cylinder 16 towards the tip of the body cylinder 11.

[0016]

21 is the 2nd connection cylinder. Both ends are opened wide and this 2nd connection cylinder 21 has the connection cylinder halt section 22 which prevents the migration by which the 1st connection cylinder 16 goes at the tip of that body cylinder 11 in contact with an internal hole.

[0017]

Fitting of the 2nd connection cylinder 21 is carried out to the periphery section of a part in which it was prepared in the periphery section of the 1st connection cylinder 16 possible [axial directional movement], and the projection was formed in shaft orientations for the tip and the end face, and the circular sulcus 3 of piping 1 was formed for the tip from the 1st tip and end face of the connection cylinder 16.

[0018]

Furthermore, when the 1st engagement hole 23 which penetrates between an internal hole and the periphery sections with the circular sulcus 3 of piping 1 in the location which counters when fitting of the tip is carried out to piping 1 is formed in the 2nd connection cylinder 21 and it moves to it towards the end face of the body cylinder 11, the 2nd engagement hole 24 is formed in the circular sulcus 17 of the 1st connection cylinder 16, and the location which counters. In addition, each engagement holes 23 and 24 are the taper

holes in which a diameter carries out sequential expansion from the internal hole side of the 2nd connection cylinder 21 towards the periphery section side.

[0019]

25 is 1st engagement object which consists of a solid sphere. Radial migration of the 2nd connection cylinder 21 is held possible at the 1st engagement hole 23 of the 2nd connection cylinder 21, and, as for this 1st engagement object 25, the ejection by the side of an internal hole is prevented.

[0020]

26 is 2nd engagement object which consists of a solid sphere. Radial migration of the 2nd connection cylinder 21 is held possible at the 2nd engagement hole 24 of the 2nd connection cylinder 21, and, as for this 2nd engagement object 26, the ejection by the side of an internal hole is prevented.

[0021]

27 is an actuation sleeve. The range which can cover the 1st engagement hole 23 and the 2nd engagement hole 24 in the periphery section of the 2nd connection cylinder 21 at coincidence is established in this actuation sleeve 27 possible [axial directional movement].

[0022]

Moreover, the actuation sleeve 27 has the engagement object presser-foot sections 28 and 29 of the pair which pushes the 1st engagement object 25 and the 2nd engagement object 26, respectively, and is made to project to the inner circumference side of the 2nd connection cylinder 21 when it moves to the inner circumference section towards the tip of the body cylinder 11. When it moves towards the end face of the body cylinder 11, it has charge coalesce ***** 30 and 31 of the pair which permits the protrusion to the periphery section of the 2nd connection cylinder 21 of the 1st engagement object 25 and the 2nd engagement object 26.

[0023]

32 is an actuation sleeve energization spring which consists of a compression coil spring. This spring 32 applies the force to the actuation sleeve 27 towards the tip of the body cylinder 11.

33 is a rotation lock object. Thread-part 33a is formed in the periphery section, this thread-part 33a is formed in the end face of the internal hole of the 2nd connection cylinder 21, and this rotation lock object 33 is screwed in thread-part 21a. While a tip contacts the body cylinder end face side face of the rotation lock object receptacle section 13 of the periphery section of the body cylinder 11, a end face projects outside from the end face of the 2nd connection cylinder, and, as for the rotation lock object 33, the rotation control unit 34 is formed there. For this reason, the rotation lock object 33 is moved to the shaft orientations of the body cylinder 11, rotating by rotation of the rotation control unit 34.

[0024]

And push the body cylinder 11, it is made to move in the same direction, and the rotation lock object 33 makes a valve seat 12 estrange from valve element section 14b of a valve element 14, when moving towards the tip of the body cylinder 11.

[0025]

In addition, it is the long hole by which 35 in drawing was formed in the 2nd connection cylinder 21 in accordance with shaft orientations, and the guide pin which 36 was attached in the body cylinder 11 and inserted in the long hole 35, and shows that the body cylinder 11 moves these to shaft orientations. An operation of the piping joint constituted in this way is explained.

[0026]

A piping joint is explained with reference to drawing 1 about the case where it has not connected with piping. In this case, while displacing the 1st connection cylinder 16 to the tip side of the body cylinder 11 with the connection cylinder energization spring 20 and carrying out the variation rate of the 1st engagement object 25 of the 1st engagement hole 25 of the 2nd connection cylinder 21 to the periphery section of the 2nd connection cylinder 21 The variation rate of the 2nd engagement object 26 of the 2nd engagement hole 24 of the 2nd connection cylinder 21 is turned and carried out to the periphery section of the 2nd connection cylinder 21.

[0027]

Moreover, the variation rate of the actuation sleeve 27 is carried out towards the tip of the body cylinder 11 with the actuation sleeve energization spring 32. At this time, the actuation sleeve 27 has received the 1st engagement object 25 of the 1st engagement hole 25 located in the periphery section side of the 2nd connection cylinder 21 by each charge coalesce ***** 30 and 31, and the 2nd engagement object 26 of the 2nd engagement hole 24. Thereby, the migration which turned the actuation sleeve 27 at the tip of the body cylinder 11 is regulated. The valve element 14 was pushed on the spring 15, and valve element section 14b sat down to the valve seat 12, and it has closed the internal hole of the body cylinder 11.

[0028]

A piping joint is explained with reference to drawing 2 about the case where it connects with piping. Piping 1

is inserted at the tip of the body cylinder 11 through the 1st connection cylinder 16 from the tip of the 2nd connection cylinder 21. At this time, the annular projected part 2 of piping 1 turns and pushes the tip of the 1st connection cylinder 16 on a end face side. The 1st connection cylinder 16 moves to the spring force of the energization spring 20 towards a end face side in this way, and the condition of turning and carrying out the variation rate of the 1st engagement object 25 of the 1st engagement hole 25 of the 2nd connection cylinder 21 and the 2nd engagement object 26 of the 2nd engagement hole 24 to the periphery section of the 2nd connection cylinder 21 is canceled.

[0029]

The 2nd connection cylinder 21 is pushed on the energization spring 32 by coincidence, and moves to it towards the tip of the body cylinder 11. At this time, the condition that each engagement object presser-foot sections 28 and 29 pressed down the 1st engagement object 25 of the 1st engagement hole 25 and the 2nd engagement object 26 of the 2nd engagement hole 24 from the periphery side, respectively, and displaced them towards the internal hole of the 2nd connection cylinder 21 is held.

[0030]

And the 2nd engagement object 26 of the 2nd engagement hole 24 is pushed on the presser-foot section 29 of the actuation sleeve 27, and engages with the circular sulcus 17 of the 1st connection cylinder 16.

Moreover, the 1st engagement object 25 of the 1st engagement hole 23 is pushed on the actuation sleeve 27, and engages with the circular sulcus 32 of piping 1.

[0031]

Moreover, the stopper 4 formed in piping 1 pushes cylindrical section 14a of the valve element 14 of the body cylinder 11, and separates valve element section 14b from a valve seat 12. The internal hole of a body 11 is opened wide by this, the communication trunk connected to piping 11, the body cylinder 11, and the body cylinder 11 is opened for free passage, and the refrigerant of refrigerant restoration equipment is supplied to piping 11.

[0032]

In this condition, the condition that piping 1 and a piping joint were once connected as shown in drawing 2 can be locked. However, the body cylinder 11 and the rotation lock object 33 are in the location shown in drawing 1. However, if the actuation sleeve 27 is accidentally turned and moved to the end face of the body cylinder 11. The condition that the 1st and 2nd engagement objects 25 and 26 are engaging with the circular sulcus 3 of piping 1 and the circular sulcus 17 of the 1st connection cylinder 16 is canceled, and an engagement object becomes free. The 1st connection cylinder 16 may be pushed on a spring 20, may move towards the tip side of the body cylinder 11, and it may be said that connection between piping and a joint will be canceled.

[0033]

Then, as shown in drawing 2, the rotation lock object 33 is rotated by the rotation control unit 34. The rotation lock object 33 moves toward the tip of the body cylinder 11, rotating in the combination of thread-part 33a and thread-part 21a of the 2nd connection cylinder 21.

[0034]

When it does so, the tip of the rotation lock object 33 contacts the body end face side face of the rotation lock object half section 13 of the body cylinder 11, and the body cylinder 11 makes it move towards the tip. The body cylinder 11 moves towards that tip by this, and the die length of the shaft orientations which the peripheral face of the body cylinder 11 and the inner skin of the 1st connection cylinder 16 lap, and contact increases. This sake, With the frictional resistance by contact to the peripheral face of the body cylinder 11, and the inner skin of the 1st connection cylinder 16 Even when the actuation sleeve 27 was turned and moved to the end face of the body cylinder 11, the condition that the 1st and 2nd engagement objects 25 and 26 are engaging with the circular sulcus 3 of piping 1 and the circular sulcus 17 of the 1st connection cylinder 16 is canceled and an engagement object frees A spring 20 resists the force applied towards the tip side of the body cylinder 11 to the 1st connection cylinder 16, and the 1st connection cylinder 16 suspends the migration added towards the tip of the body cylinder 11. O ring 18 especially prepared in the 1st connection cylinder 16 is raising frictional resistance with the body cylinder 11.

[0035]

For this reason, the 1st connection cylinder 16 is pushed on a spring 20, moves towards the tip side of the body cylinder 11, it prevents that connection between piping and a joint is canceled, and connection between piping 1 and a piping joint can certainly be locked.

[0036]

And because this lock actuation rotates the rotation lock object 33, it is easy.

In addition, this design is not limited to the example mentioned above, but can deform variously and can be carried out.

[0037]

[Effect of the Device]

As explained above, according to this design, the piping joint which can certainly lock a junction condition with piping by easy actuation can be obtained.

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DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]

[Drawing 1] The sectional view showing the condition of not connecting with piping in the piping joint in connection with one example of this design.

[Drawing 2] The sectional view showing the condition of connecting with piping in the piping joint of this example.

[Description of Notations]

1 --- Piping 11 [16 / 27 --- An actuation sleeve, 33 --- Rotation lock object. / --- The 1st connection cylinder, 21 --- 2nd connection cylinder] --- A body cylinder, 14 --- Valve element

[Translation done.]

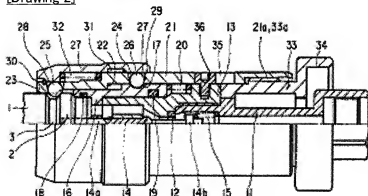
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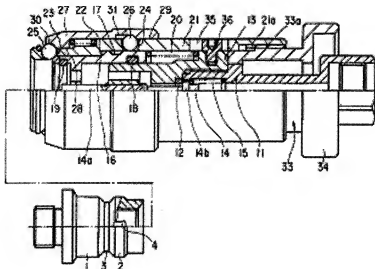
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DRAWINGS

[Drawing 2]



[Drawing 1]



[Translation done.]

書誌

- (19)【発行国】日本国特許庁(JP)
(12)【公報種別】公開実用新案公報(U)
(11)【公開番号】実開平7-20426
(43)【公開日】平成7年(1995)4月11日
(54)【考案の名称】配管継手
(51)【国際特許分類第6版】

F16D 1/10 A
F16L 21/08 Z

【審査請求】有

【請求項の数】1

【出願形態】OL

【全頁数】3

(21)【出願番号】実願平5-51194

(22)【出願日】平成5年(1993)9月21日

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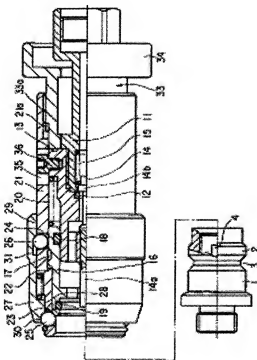
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要約

(57)【要約】

【目的】本考案は配管との接合状態を簡単且つ確実にロックできる配管継手を提供することを目的とする。

【構成】基端に接続管が接続され内部に弁座が設けられ本体筒と、本体筒の内部設けられ弁座に着座する弁体と、弁体付勢体と、本体筒の外周部に移動可能で且つ液密に嵌合され外周部に環状溝が形成された第1の接続筒と、第1の接続筒付勢体と、第1の接続筒の外周部に設けられ内部に第1の接続筒停止部を有し、係合体を保持する2個の係合孔を有する第2の接続筒と、第2の接続筒の外周部に移動可能に設けられ各係合体の移動を規制する操作スリーブと、操作スリーブ付勢体と、第2の接続筒の内部の基端に螺合され先端が本体筒のに当接するとともに基端が回転操作部が形成され前記弁座を前記弁体から離間させる回転ロック体とを具備することとを特徴とする。



請求の範囲

【実用新案登録請求の範囲】

【請求項1】 端部の外周部に環状溝が形成された配管に接続される配管継手において、両端が開放され先端が前記配管と連通するとともに基端に接続管が接続され且つ内部孔に弁座が設けられているとともに外周部に回転ロック体受け部が形成された本体筒と、この本体筒の内部孔に軸方向移動可能に配置され前記弁座に着座にして前記本体筒の内部孔を閉じるとともに、前記本体筒と前記配管とが連通した時に前記配管により前記本体筒の先端に向けた移動が阻止される弁体と、この弁体に前記弁座に向けた力を加える弁体付勢体と、両端が開放され前記本体筒の先端の外周に軸方向移動可能で且つ液密に嵌合されるとともに先端が前記配管の先端の外周部に嵌合され且つ外周部に環状の環状溝が形成された第1の接続筒と、この第1の接続筒に前記本体筒の先端に向けて力を加えるとともに前記本体筒にその基端に向けて力を加える第1の接続筒付勢体と、両端が開放され前記第1の接続筒の外周に軸方向移動可能に設けられ先端および基端が前記第1の接続筒の先端および基端より突出し先端が前記配管の環状溝が形成された部分の外周部に嵌合され且つ内部孔に前記第1の接続筒が当接してその前記本体筒の先端に向かう移動を阻止する接続筒停止部を有し、さらに先端が前記配管に嵌合された時に前記配管の環状溝と対向する位置に内部孔と外周部との間を貫通する第1の係合孔を有するとともに、前記本体筒の基端に向けて移動した時に前記第1の接続筒の環状溝と対向する位置に第2の係合孔を有する第2の接続筒と、この第2の接続筒の前記第1の係合孔に前記第2の接続筒半径方向の移動が可能に保持された第1の係合体および前記第2の係合孔に前記第2の接続筒の半径方向の移動が可能に保持された第2の係合体と、前記第2の接続筒の外周部に前記第1の係合孔および前記第2の係合孔を同時にカバーできる範囲を軸方向移動可能に設けられ、内周部に前記本体筒の先端に向けて移動した時に前記第1の係合体および前記第2の係合体を夫々押して前記第2の接続筒の内周側に突出させる係合体押え部を有するとともに、前記本体筒の基端に向けて移動した時に前記第1の係合体および前記第2の係合体の前記第2の接続筒の外周部への突出を許容する係合体逃し部を有する操作スリーブと、この操作スリーブに前記本体筒の先端に向けて力を加える操作スリーブ付勢体と、前記第2の接続筒の内部孔の基端に螺合され先端が前記本体筒の外周部の回転ロック体受け部の本体筒基端側面に当接するとともに基端が前記第2の接続筒の基端から外部に突出してそこに回転操作部が形成され、この回転操作部の回転操作により前記本体筒の軸方向に移動し前記本体筒の先端に向けて移動する時に前記本体筒を押して同じ方向に移動させて前記弁座を前記弁体から離間させる回転ロック体と、を具備することを特徴とする配管継手。

詳細な説明

【考案の詳細な説明】

【0001】

【産業上の利用分野】

本考案は配管継手に関する。

【0002】

【従来の技術】

例えば自動車用の冷房装置の配管と冷媒充填装置の配管とを接続する場合に、冷房装置の配管として、端部の外周部に環状の環状溝が形成された配管を用いている。

【0003】

このように端部の外周部に環状の環状溝が形成された配管に接続される配管継手として次に述べる構成のものがある。

すなわち、両端が開放され先端開口が前記配管と連通するとともに基端開口に接続管が接続され且つ内部孔に弁座が形成された本体筒と、この本体筒の内部孔に軸方向移動可能に配置され前記弁座に着座して前記本体筒の内部孔を閉じる弁体と、この弁体に前記弁座に向けた力を加える弁体付勢体と、前記本体筒の先端の外周に軸方向移動可能に嵌合されるとともに先端が前記配管の先端の外周部に嵌合され且つ外周部に環状の環状溝が形成された接続筒と、内部孔に前記接続筒が当接してその前記本体筒の先端に向けた移動を阻止する接続筒停止部を有し、配管に嵌合された時に前記配管の環状溝と対向する位置に内部孔と外周部との間を貫通する係合孔を有する接続筒と、この接続筒の係合孔に前記接続筒の半径方向の移動が可能に保持され係合体と、前記接続筒に前記本体筒の先端に向けた力を加えるとともに前記本体筒にその基端に向けた力を加える接続筒付勢体と、前記接続筒の外周部に軸方向移動可能に設けられ前記本体筒の先端に向けて移動した時に前記係合体を前記接続筒の内周側に突出させるとともに、前記本体筒の基端に向けて移動した時に前記係合体が前記接続筒の内周側へ突出することを許容する操作スリーブと、この操作スリーブに前記本体筒の先端に向けた力を加える操作スリーブ付勢体とを具備したものである。

【0004】

この配管継手では、常時は、接続筒が接続筒付勢体により本体筒の基端に向けて変位され、接続筒に形成された係合孔に設けられた係合体は本体筒に押されて接続筒の外周部に変位されている。また、操作スリーブが操作スリーブ付勢体により本体筒先端側に変位されるが係合体により変位を阻止されている。

【0005】

そして、この配管継手を配管に接続する場合には、配管が接続筒の先端から本体筒の先端に挿入され、係合孔に設けられた係合体が接続筒に押されて配管の環状溝に係合する。配管は本体筒の弁体を押して通路を開く。操作スリーブは付勢体により本体筒の先端側に変位されているので、係合体が配管の環状溝に係合している状態を保持している。これにより配管と継手との接続状態をロックできる。

【0006】

【考案が解決しようとする課題】

しかし、前記の配管継手においても、誤って接続筒を本体筒の基端に向けて移動させると、係合体が配管の環状溝に係合している状態が解除されて係合体が自由になり、配管と継手との接続が解除されてしまうということがある。

本考案は前記事情に基づいてなされたもので、配管との接合状態を簡単な操作で確実にロックできる配管継手を提供することを目的とする。

【0007】

【課題を解決するための手段】

前記目的を達成するために本考案の配管継手は、端部の外周部に環状溝が形成された配管に接続される配管継手において、両端が開放され先端が前記配管と連通するとともに基端に接続管が接続され且つ内部孔に弁座が設けられているとともに外周部に回転ロック体受け部が形成された本体筒と、この本体筒の内部孔に軸方向移動可能に配置され前記弁座に着座して前記本体筒の内部孔を閉じるとともに、前記本体筒と前記配管とが連通した時に前記配管により前記本体筒の先端に向けた移動が阻止される弁体と、この弁体に前記弁座に向けた力を加える弁体付勢体と、両端が開放され前記本体筒の先端の外周に軸方向移動可能且つ液密に嵌合されるとともに先端が前記配管の先端の外周部に嵌合され且つ外周部に環状の環状溝が形成された第1の接続筒と、この第1の接続筒に前記本体筒の先端に向けて力を加えるとともに前記本体筒にその基端に向けて力を加える第1の接続筒付勢体と、両端が開放され前記第1の接続筒の外周に軸方向移動可能に設けられ先端および基端が前記第1の接続筒の先端および基端より突出し先端が前記配管の環状溝が形成された部分の外周部に嵌合され且つ内部孔に前記第1の接続筒が当接してその前記本体筒の先端に接近する向きの移動を阻止する接続筒停止部を有し、さらに先端が前記配管に嵌合された時に前記配管の環状溝と対向する位置に内部孔と外周部との間を貫通する第1の係合孔を有するとともに、前記本体筒の基端に向けて移動した時に前記第1の接続筒の環状溝と対向する位置に第2の係合孔を有する第2の接続筒と、この第2の接続筒の前記第1の係合孔に前記第2の接続筒半径方向の移動が可能に保持された第1の係合体および前記第2の係合孔に前記第2の接続筒の半径方向の移動が可能に保持された第2の係合体と、前記第2の接続筒の外周部に前記第1の係合孔および前記第2の係合孔を同時にカバーできる範囲を軸方向移動可能に設けられ、内周部に前記本体筒の先端に向けて移動した時に前記第1の係合体および前記第2の係合体を夫々押して前記第2の接続筒の内周側に突出させる係合体押入部を有するとともに、前記本体筒の基端に向けて移動した時に前記第1の係合体および前記第2の係合体の前記第2の接続筒の外周部への突出を許容する係合体逃し部を有する操作スリーブと、この操作スリーブに前記本体筒の先端に向けて

力を加える操作スリーブ付勢体と、前記第2の接続筒の内部孔の基端に螺合され先端が前記本体筒の外周部の回転ロック体受け部の本体筒基端側面に当接するとともに基端が前記第2の接続筒の基端から外部に突出してそこに回転操作部が形成され、この回転操作部の回転操作により前記本体筒の軸方向に移動し前記本体筒の先端に向けて移動する時に前記本体筒を押しと同じ方向に移動させて前記弁座を前記弁体から離間させる回転ロック体を具備することを特徴とする。

【0008】

【作用】

配管を第2の接続筒の先端から第1の接続筒を経て本体筒の先端に挿入する。

第1の係合孔の第1の係合体が操作スリーブに押されて配管の環状溝に係合する。第2の係合孔の第2の係合体が操作スリーブに押されて第1の接続筒の環状溝に係合する。配管は本体筒の弁体を押し通路を開く。操作スリーブは付勢体により本体筒の先端側に変位されているので、係合体が配管の環状溝に係合している状態を保持している。

【0009】

そして、回転ロック体を回転して本体筒の先端側に移動し、第2の接続筒が本体筒の先端に向けた移動を阻止する。これにより配管と継手との接続状態を確実にロックできる。

【0010】

【実施例】

本考案の一実施例について図1および図2を参照して説明する。この実施例は、自動車用の冷房装置の配管と冷媒充填装置の配管とを接続する場合に用いる配管継手を対象にしている。

【0011】

図1に示すように1は冷房装置の配管であり、この配管1は端部の外周部に先端側から環状突部2と環状溝3が並んで形成されている。配管1の内部にはストップ4が設けられている。配管1は図示しない冷房装置に接続されている。

【0012】

次に配管継手の構成について説明する。

11は本体筒である。この本体筒11は、両端が開放され先端が配管1と連通するとともに基端には図示しない冷媒充填装置に接続された接続管が接続されている。また、本体筒11は、内部孔に弁座12が設けられているとともに、外周部に回転ロック体受け部13が形成されている。

【0013】

14は弁体である。この弁体14は棒状部14aとこの棒状部14aの基端に形成された弁体部14bとで構成されている。そして、弁体14の棒状部14aは本体筒11の内部孔に軸方向移動可能に配置され、棒状部14aが本体筒11の先端に向けて移動することにより、弁体部14bが弁座12に着座して本体筒11の内部孔を閉じるとともに、本体筒11と配管1とが連通した時に棒状部14aが配管1のストップ4に当接して本体筒11の先端に向けた移動が阻止される。

【0014】

15は圧縮コイルばねからなる弁体付勢ばねで、このばね15は弁体14に弁座12に向けた力を加えている。16は第1の接続筒である。この第1の接続筒16は両端が開放されており、外周部に環状溝17が形成されている。本体筒11の先端の外周部に軸方向移動可能で嵌合されているとともに、内部孔にリング19が設けられて本体筒11の外周部との間とに気密性をもたせている。そして、第1の接続筒16の先端は配管1の外周部に嵌合されるようになっており、内部孔の先端にリング18が設けられている。

【0015】

20は圧縮コイルばねからなる第1の接続筒付勢ばねである。このばね20は、第1の接続筒16に本体筒11の先端に向けて力を加えるとともに、本体筒11にその基端に向けて力を加えている。

【0016】

21は第2の接続筒である。この第2の接続筒21は、両端が開放され、内部孔に第1の接続筒16が当接してその本体筒11の先端に向かう移動を阻止する接続筒停止部22を有している。

【0017】

第2の接続筒21は、第1の接続筒16の外周部に軸方向移動可能に設けられ先端および基端が第1の接続筒16の先端および基端より軸方向に突出し、先端が配管1の環状溝3が形成された部分の外周部に嵌合されている。

【0018】

さらに、第2の接続筒21には、先端が配管1に嵌合された時に配管1の環状溝3と対向する位置に、内部孔と外周部との間を貫通する第1の係合孔23が形成され、また本体筒11の基端に向けて移動した時に第1の接続筒16の環状溝17と対向する位置に第2の係合孔24が形成されている。なお、各係合孔23、24は第2の接続筒21の内部孔側から外周部側に向けて直径が順次拡大するテーパ孔となっている。

【0019】

25は球体からなる第1の係合体である。この第1の係合体25は、第2の接続筒21の第1の係合孔23に第2の接続筒21の半径方向の移動が可能に保持されており、内部孔側への抜け出しが阻止されている。

【0020】

26は球体からなる第2の係合体である。この第2の係合体26は、第2の接続筒21の第2の係合孔24に第2の接続筒21の半径方向の移動が可能に保持されており、内部孔側への抜け出しが阻止されている。

【0021】

27は操作スリーブである。この操作スリーブ27は、第2の接続筒21の外周部に第1の係合孔23および第2の係合孔24を同時にカバーできる範囲を軸方向移動可能に設けられている。

【0022】

また、操作スリーブ27は、内周部に本体筒11の先端に向けて移動した時に第1の係合体25および第2の係合体26を夫々押して第2の接続筒21の内周側に突出させる一対の係合体押え部28、29を有しており、本体筒11の先端に向けて移動した時に第1の係合体25および第2の係合体26の第2の接続筒21の外周部への突出を許容する一対の係合体逃し部30、31を有している。

【0023】

32は圧縮コイルばねからなる操作スリーブ付勢ばねである。このばね32は、操作スリーブ27に本体筒11の先端に向けて力を加えるものである。

33は回転ロック体である。この回転ロック体33は、外周部にねじ部33aが形成され、このねじ部33aが第2の接続筒21の内部孔の基端に形成されねじ部21aに螺合されている。回転ロック体33は、先端が本体筒11の外周部の回転ロック体受け部13の本体筒基端側面に当接するとともに、基端が第2の接続筒の基端から外部に突出してそこに回転操作部34が形成されている。このため、回転ロック体33は、回転操作部34の回転により回転しながら本体筒11の軸方向に移動される。

【0024】

そして、回転ロック体33は、本体筒11の先端に向けて移動する時に本体筒11を押して同じ方向に移動させて弁座12を弁体14の弁体部14bから離間させるものである。

【0025】

なお、図中35は第2の接続筒21に軸方向に沿って形成された長孔、36は本体筒11に取付けられて長孔35に挿入されたガイドピンであり、これらは本体筒11が軸方向に移動する事を案内するものである、このように構成された配管継手の作用について説明する。

【0026】

配管継手を配管に接続していない場合について図1を参照して説明する。

この場合、第1の接続筒16は、接続筒付勢ばね20により本体筒11の先端側に変位し、第2の接続筒21の第1の係合孔25の第1の係合体25を第2の接続筒21の外周部に変位させるとともに、第2の接続筒21の第2の係合孔24の第2の係合体26を第2の接続筒21の外周部に向けて変位させている。

【0027】

また、操作スリーブ27は、操作スリーブ付勢ばね32により本体筒11の先端に向けて変位されている。この時、操作スリーブ27は各係合体逃し部30、31で第2の接続筒21の外周部側に位置する第1の係合孔25の第1の係合体25と第2の係合孔24の第2の係合体26を受け入れる。これにより操作スリーブ27は本体筒11の先端に向けた移動が規制される。弁体14はばね15に押されて弁体部14bが弁座12に着座して本体筒11の内部孔を閉じている。

【0028】

配管継手を配管に接続する場合について図2を参照して説明する、配管1を第2の接続筒21の先端から第1の接続筒16を経て本体筒11の先端に挿入する。この時、配管1の環状突部2が第1の接続筒16の先端を基端側に向けて押す。第1の接続筒16は付勢ばね20のばね力にこうして基端側に向けて移動し、第2の接続筒21の第1の係合孔25の第1の係合体25と第2の係合孔24の第2の係合体26を第2の接続筒21の外周部に向けて変位させている状態を解除する。

【0029】

同時に第2の接続筒21が付勢ばね32に押されて本体筒11の先端に向けて移動する。この時、各係合体押え部28、29が、第1の係合孔25の第1の係合体25と第2の係合孔24の第2の係合体26を夫々外周側から押えて第2の接続筒21の内部孔に向けて変位した状態を保持する。

【0030】

そして、第2の係合孔24の第2の係合体26が操作スリーブ27の押え部29に押されて第1の接続筒16の環状溝17に係合する。また、第1の係合孔23の第1の係合体25が操作スリーブ27に押されて配管1の環状溝32に係合する。

【0031】

また、配管1に設けられたストップ4は本体筒11の弁体14の棒状部14aを押して弁体部14bを弁座12から離す。これにより本体11の内部孔が開放され、配管1と本体筒11および本体筒11に接続された接続管が連通され、冷媒充填装置の冷媒が配管1へ供給される。

【0032】

この状態では図2に示すように一応配管1と配管継手とが接続された状態をロックできる。ただし、本体筒11および回転ロック体33は図1に示す位置にある。しかし、誤って操作スリーブ27を本体筒11の基端に向けて移動させると、第1および第2の係合体25、26が配管1の環状溝32および第1の接続筒16の環状溝17に係合している状態が解除されて係合体が自由になり、第1の接続筒16がばね20に押されて本体筒11の先端側

に向けて移動して、配管と継手との接続が解除されてしまうということがある。

【0033】

そこで、図2に示すように回転操作部34により回転ロック体33を回転する。回転ロック体33はねじ部33aと第2の接続筒21のねじ部21aとの組合せで回転しながら本体筒11の先端に向かって移動する。

【0034】

そうすると、回転ロック体33の先端が本体筒11の回転ロック体停止部13の本体基端側面に当接し、本体筒11がその先端に向けて移動させる。これにより本体筒11がその先端に向けて移動し、本体筒11の外周面と第1の接続筒16の内周面とが重なって接触する軸方向の長さが増大する、このため、本体筒11の外周面と第1の接続筒16の内周面との接触による摩擦抵抗により、操作スリーブ27を本体筒11の基端に向けて移動させると、第1および第2の係合体25、26が配管1の環状溝3および第1の接続筒16の環状溝17に係合している状態が解除されて係合体が自由にした場合でも、ばね20が第1の接続筒16に対して本体筒11の先端側に向けて加える力に抗して、第1の接続筒16が本体筒11の先端に向けて加える移動を停止する。特に第1の接続筒16に設けたOリング18が本体筒11との摩擦抵抗を高めている。

【0035】

このため、第1の接続筒16がばね20に押されて本体筒11の先端側に向けて移動して、配管と継手との接続が解除されることを防止して、配管1と配管継手との接続を確実にロックできる。

【0036】

しかも、このロック操作は回転ロック体33を回転させるだけに簡単なものである。

なお、本考案は前述した実施例に限定されず種々変形して実施することができる。

【0037】

【考案の効果】

以上説明したように本考案によれば、配管との接合状態を簡単な操作により確実にロックできる配管継手を得ることができる。

図の説明

【図面の簡単な説明】

【図1】本考案の一実施例にかかわる配管継手において配管と接続されていない状態を示す断面図。

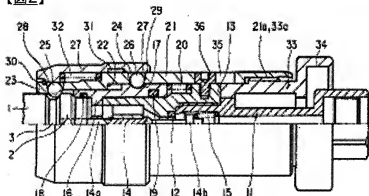
【図2】同実施例の配管継手において配管と接続されている状態を示す断面図。

【符号の説明】

1…配管、11…本体筒、14…弁体、16…第1の接続筒、21…第2の接続筒、27…操作スリーブ、33…回転ロック体。

図面

【図2】



【図1】

